PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416
P81462PC00ER		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB2004/000951	08.03.2004	14.03.2003
International Patent Classification (IPC) or national classification and IPC		
E02D27/42, E02D13/04		
Applicant		
CEMENTATION FOUNDATIONS SKANSKA LIMITED et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 2 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
11.01.2005	21.03.2005

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/GB2004/000951

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-12	as originally filed

Claims, Numbers

1-11	as originally filed

Drawings, Sheets

1/3-3/3	as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/GB2004/000951

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-11
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.1 The document EP-A-0302707 (D1, cf. Fig. 4) is regarded as being the closest prior art to the subject-matter of claim 1. It discloses an apparatus for positioning an element in a borehole, the apparatus comprising an upper positioning means (7,8) and a lower positioning means (9,10) for adjusting the plan position of the element at upper and lower levels respectively, wherein the apparatus defines an interior space into which, in use, the element is lowered.

1.2 The subject-matter of claim 1 differs from this known apparatus in that the positioning means are joined by means of a connection having an adjustable length. The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

1.3 D1 is silent about the fixation of the positioning means for adjusting the element (locating frames). These positioning means (7-10) appear fixed to the frame (cf. Fig. 7). The connection does clearly not have an adjustable length. From US-A-1549168 (D2, cf. Fig. 1) it is known to have a connection with adjustable length between two well plugs, allowing manipulation to lower and elevate casings without permitting the escape of fluid from the well. This disclosure is silent about movement in plan direction. JP-A-60141924 (D3, cf. Fig. 1) discloses jacks (5,7) and a measuring assembly (A,9,13,6) to erect a steel pillar in a vertical shaft. The features of claim 1 are separately disclosed in the prior art and employed for different purposes. The specific combination is thus not obvious nor is it a straightforward development. Therefore claim 1 and appended claims 2-8 of the present application are considered as involving an inventive step (Article 33(3) PCT).

2. Independent claim 9 claims a method of positioning an element in a borehole with steps using an apparatus which corresponds directly to apparatus comprising the features introduced by product claim 1. Claim 1 is considered to be novel and inventive. Therefore, for the same reasons as mentioned above (cf. paragraphs 1.2 and 1.3), corresponding method claim 9 and appended claims 10,11 of the present application are considered to be new (Article 33(2) PCT) and involve an inventive step (Article 33(3) PCT).

3. Claims 1-11 are considered industrially applicable and therefore meet the criteria of Article

33(4) PCT.

CLAIMS

1. An apparatus for positioning an element in a borehole, the apparatus comprising an upper positioning means and a lower positioning means for adjusting the plan position of the element at upper and lower levels respectively, wherein the positioning means are joined by means of a connection having an adjustable length, and wherein the apparatus defines an interior space into which, in use, the element is lowered.

2. An apparatus as claimed in claim 1, wherein the upper and lower positioning means each comprise a frame, the frames defining the interior space into which, in use, the element is lowered.

3. An apparatus as claimed in claim 2, wherein the upper and lower positioning means are provided with a guide means for adjusting the plan position of an element within the interior space.

4. An apparatus as claimed in claim 3, wherein the guide means comprises a first and a second pair of rollers which are moveable in mutually orthogonal directions across the interior space.

5. An apparatus as claimed in any preceding claim, wherein the connection comprises wire ropes.

6. An apparatus as claimed in any one of claims 1 to 4, wherein the connection comprises chains.

7. An apparatus as claimed in anyone of claims 1 to 4, wherein the connection comprises link arms.

8. An apparatus as claimed in any preceding claim, wherein the connection comprises a pair of arms provided on one of the positioning means which are telescopically received in a pair of conduits provided on the other positioning means.

9. A method of positioning an element in a borehole, the method comprising the steps of:
i) placing into the borehole an apparatus comprising an upper positioning means and a lower positioning means for adjusting the plan position of the element at upper and lower levels respectively, wherein the positioning means are joined by means of a connection having an adjustable length;
ii) lowering the element into an interior space defined by the apparatus to a required depth within the borehole; and
iii) adjusting the upper and lower positioning means to achieve the desired plan position and orientation of the element.

10. A method as claimed in claim 9, wherein before placing the apparatus into the borehole, a temporary shaft lining tube is placed within the borehole.

11. A method as claimed in claim 10, wherein the orientation of the apparatus is fixed relative to the temporary casing by means of a plurality of locking rams.